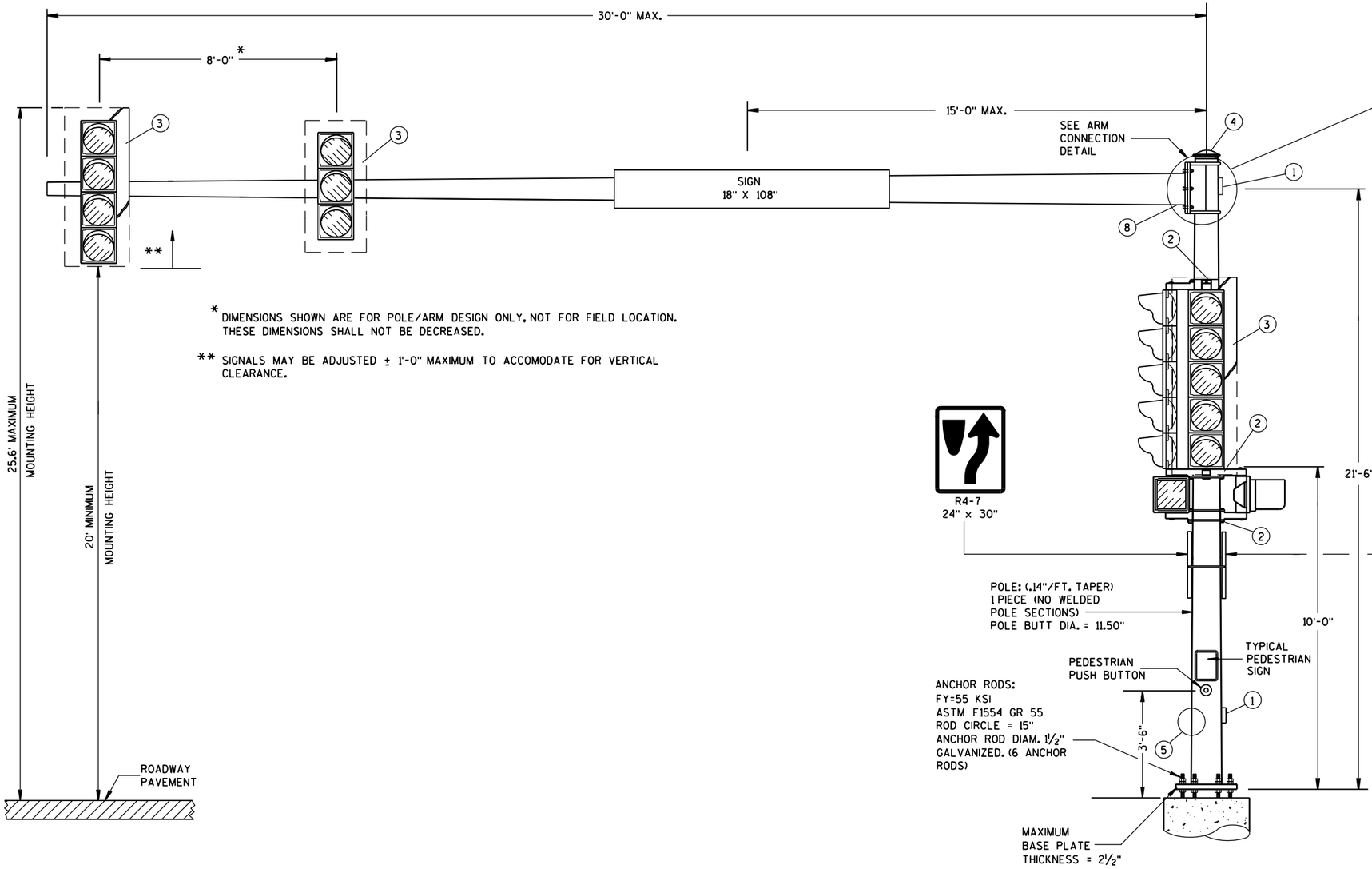
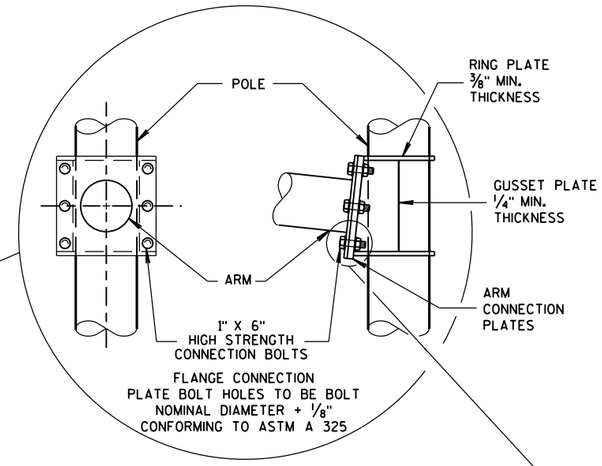
SDD 9e12-a Over Height Type 9 Pole 15 - 30' Monotube Arm

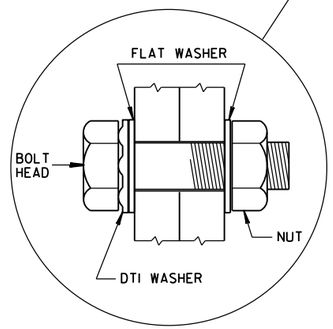


* DIMENSIONS SHOWN ARE FOR POLE/ARM DESIGN ONLY, NOT FOR FIELD LOCATION. THESE DIMENSIONS SHALL NOT BE DECREASED.

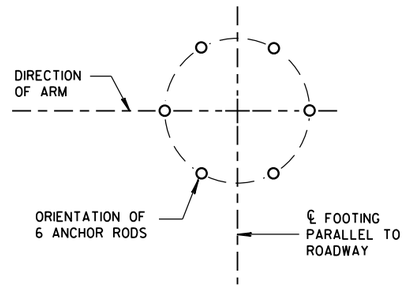
** SIGNALS MAY BE ADJUSTED ± 1'-0" MAXIMUM TO ACCOMODATE FOR VERTICAL CLEARANCE.



6 BOLT ARM CONNECTION DETAIL



RECOMMENDED BOLT ASSEMBLY DETAIL



ANCHOR ROD LOCATION

(MAXIMUM LOAD)

OVER HEIGHT TYPE 9 POLE
15'- 30' MONOTUBE ARM

OVER HEIGHT TYPE 9 POLE 15' - 30' MONOTUBE ARM	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May, 2017 DATE	/S/ Ahmet Demirbilek STATE ELECTRICAL ENGINEER
FHWA	

6

S.D.D. 9 E 12-1a

6

S.D.D. 9 E 12-1a

Version 1 **Standard Detail Drawing 9E12** (sheet a) *June 30, 2017*

Over Height Type 9 Pole 15 - 30' Monotube Arm

References:

Standard Spec 532.3.6.1 for Anchor Rod Tightening
Standard Spec 657.3.3.2 for Bolts and Bolted Connections.
TSDM Monotube Signal Arm and Pole Structures 6-1-11

Bid items associated with this drawing:

ITEM NUMBER	TITLE	UNIT
654.0110	Concrete Base Type 10	EACH
654.0100 - 0199	Concrete Base (type)	EACH
657.1400 - 1499	Install Poles Over Height (type)	EACH
657.1515 - 1530	Install Monotube Arms 15-FT to 30-FT	EACH
657.6005	Anchor Assemblies Light Poles on Structures	EACH
658.0100 - 0199	Traffic Signal Face (section) (size)	EACH
658.0400 - 0499	Pedestrian Signal Face (inch)	EACH
658.0500	Pedestrian Push Buttons	EACH
658.1100 - 1199	Programmable Traffic Signal Face (sections) (size)	EACH
658.5069	Sign Mounting Hardware (location)	LS

Standardized Special Provisions associated with this drawing:

STSP NUMBER	TITLE
NONE	

Other SDDs associated with this drawing:

SDD 9C11	Concrete Base Type 10
SDD 9C13	Concrete Base Type 10 and Type 13 Extension
SDD 12A4	Structure Identification Plaque (Required)

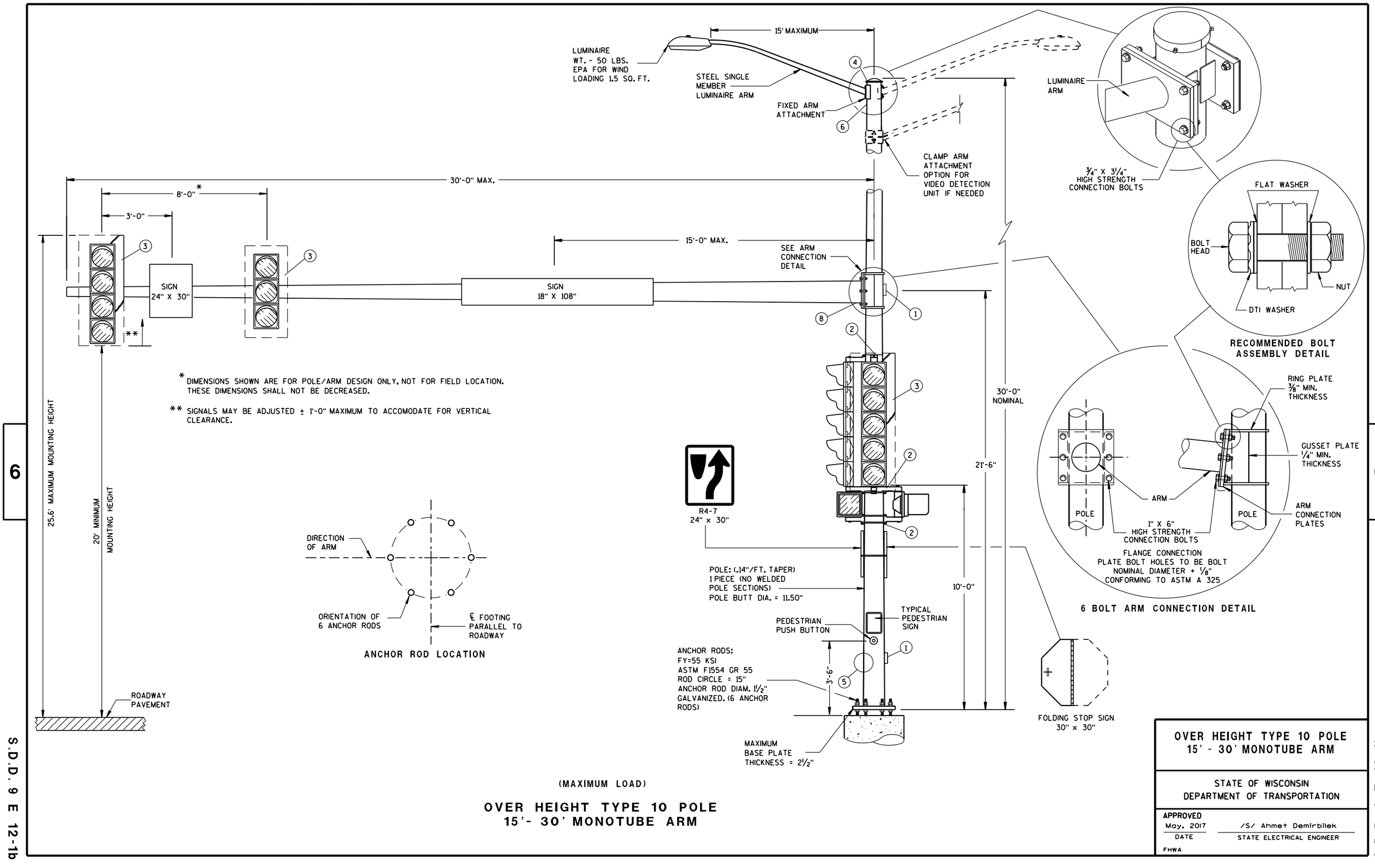
Design Notes:

SDD 9E12, sheet "e" (General Notes and Hardware Details for Over Height Type 9, 10, 12 and 13 Poles with Monotube Arms) is required.

Contact Person:

Ahmet Demirbilek (414) 220-6801

SDD 9e12-b Over Height Type 10 Pole 15' - 30' Monotube Arm



* DIMENSIONS SHOWN ARE FOR POLE/ARM DESIGN ONLY, NOT FOR FIELD LOCATION. THESE DIMENSIONS SHALL NOT BE DECREASED.

** SIGNALS MAY BE ADJUSTED ± 1'-0" MAXIMUM TO ACCOMODATE FOR VERTICAL CLEARANCE.

ANCHOR ROD LOCATION

(MAXIMUM LOAD)

OVER HEIGHT TYPE 10 POLE 15'- 30' MONOTUBE ARM

OVER HEIGHT TYPE 10 POLE 15' - 30' MONOTUBE ARM	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May, 2017 DATE FHWA	/S/ Ahmet Demirbilek STATE ELECTRICAL ENGINEER

6

S.D.D. 9 E 12-1b

6

S.D.D. 9 E 12-1b

Over Height Type 10 Pole 15' - 30' Monotube Arm

References:

Standard Spec 532.3.6.1 for Anchor Rod Tightening
Standard Spec 657.3.3.2 for Bolts and Bolted Connections.
TSDM Monotube Signal Arm and Pole Structures 6-1-11

Bid items associated with this drawing:

ITEM NUMBER	TITLE	UNIT
654.0110	Concrete Base Type 10	EACH
655.0610	Electrical Wire Lighting 12 AWG	LF
657.1400 - 1499	Install Poles Over Height (type)	EACH
657.1515 - 1530	Install Monotube Arms 15-FT to 30-FT	EACH
657.1806 - 1815	Install Luminaire Arms Steel 6-FT to 15-FT	EACH
657.6005	Anchor Assemblies Light Poles on Structures	EACH
658.0100 - 0199	Traffic Signal Face (sections) (size)	EACH
658.0400 - 0499	Pedestrian Signal Face (inch)	EACH
658.0500	Pedestrian Push Buttons	EACH
658.1100 - 1199	Programmable Traffic Signal Face (sections) (size)	EACH
658.5069	Signal Mounting Hardware (location)	LS
659.1100-1199	Luminaries Utility LED (Category)	EACH

Standardized Special Provisions associated with this drawing:

STSP NUMBER	TITLE
NONE	

Other SDDs associated with this drawing:

SDD 9C11	Concrete Base Type 10
SDD 9C13	Concrete Base Type 10 and Type 13 Extension
SDD 12A4	Structure Identification Plaque (Required)

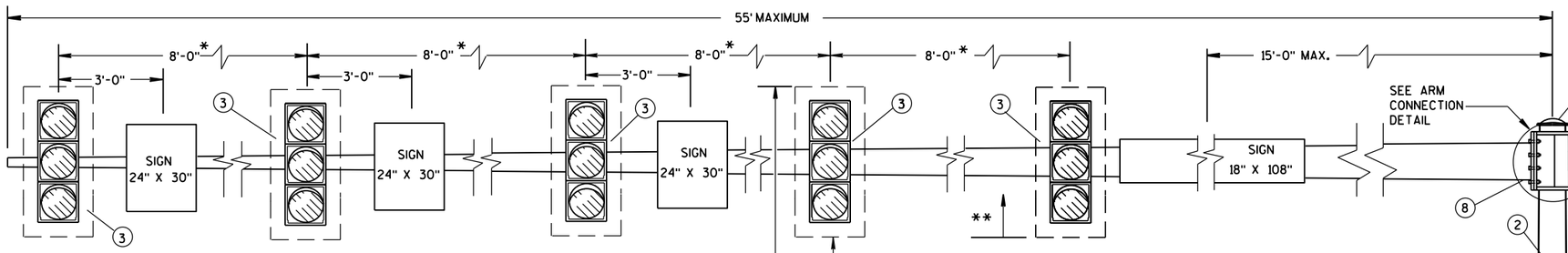
Design Notes:

SDD 9E12, sheet "e" (General Notes and Hardware Details for Over Height Type 9, 10, 12 and 13 Poles with Monotube Arms) is required.

Contact Person:

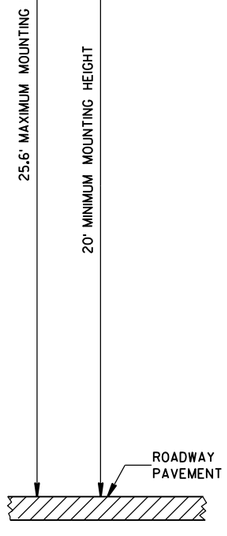
Ahmet Demirbilek (414) 220-6801

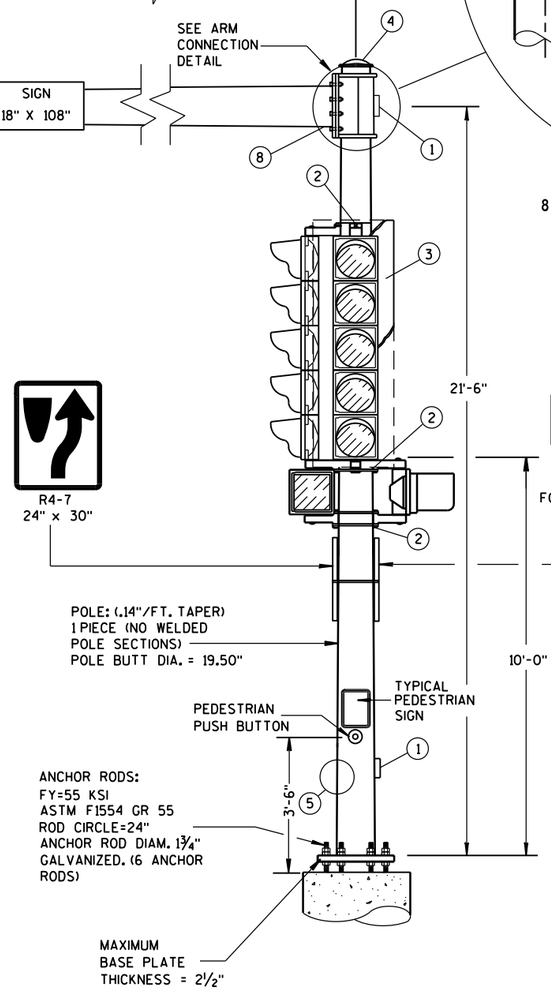
SDD 9e12-c Over Height Type 12 Pole 35' - 55' Monotube Arm

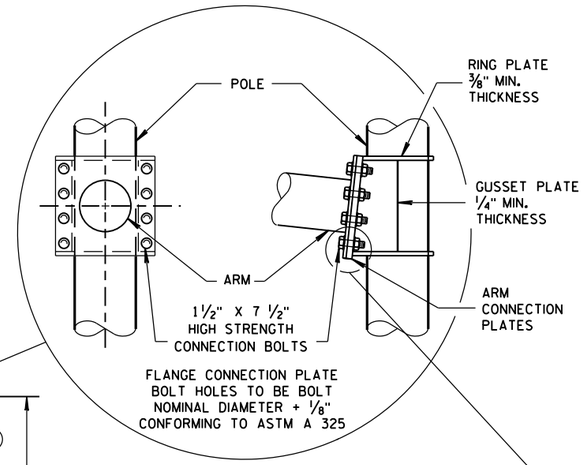


* DIMENSIONS SHOWN ARE FOR POLE/ARM DESIGN ONLY, NOT FOR FIELD LOCATION. THESE DIMENSIONS SHALL NOT BE DECREASED.

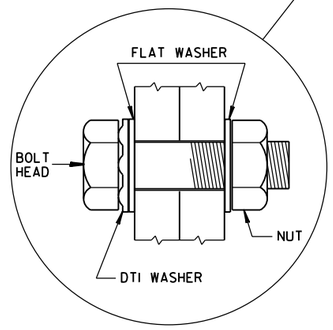
** SIGNALS MAY BE ADJUSTED ± 1'-0" MAXIMUM TO ACCOMODATE FOR VERTICAL CLEARANCE.



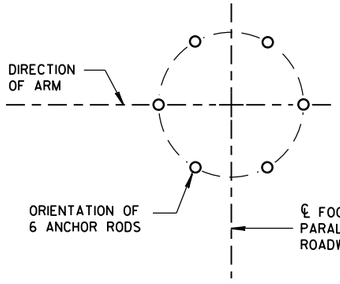




8 BOLT ARM CONNECTION DETAIL



RECOMMENDED BOLT ASSEMBLY DETAIL



ANCHOR ROD LOCATION

(MAXIMUM LOAD)

OVER HEIGHT TYPE 12 POLE
35'- 55' MONOTUBE ARM

OVER HEIGHT TYPE 12 POLE 35' - 55' MONOTUBE ARM	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May, 2017 DATE FHWA	/S/ Ahmet Demirbilek STATE ELECTRICAL ENGINEER

6

S.D.D. 9 E 12-1c

6

S.D.D. 9 E 12-1c

Standard Detail Drawing 9E12 (sheet c)

June 30, 2017

Over Height Type 12 Pole 35' - 55' Monotube Arm

References:

Standard Spec 532.3.6.1 for Anchor Rod Tightening
Standard Spec 657.3.3.2 for Bolts and Bolted Connections.
TSDM Monotube Signal Arm and Pole Structures 6-1-11

Bid items associated with this drawing:

ITEM NUMBER	TITLE	UNIT
654.0113	Concrete Base Type 13	EACH
657.1400 - 1499	Install Poles Over Height (type)	EACH
657.1535 - 1555	Install Monotube Arms 35-FT to 55-FT	EACH
657.6005	Anchor Assemblies Light Poles on Structures	EACH
658.0100 - 0199	Traffic Signal Face (sections) (size)	EACH
658.0400 - 0499	Pedestrian Signal Face (inch)	EACH
658.0500	Pedestrian Push Buttons	EACH
658.1100 - 1199	Programmable Traffic Signal Face (sections) (size)	EACH
658.5069	Signal Mounting Hardware (location)	LS

Standardized Special Provisions associated with this drawing:

STSP NUMBER	TITLE
NONE	

Other SDDs associated with this drawing:

SDD 9C12	Concrete Base Type 13 Sheets “a” and “b”
SDD 9C13	Concrete Base Type 10 and Type 13 Extension
SDD 12A4	Structure Identification Plaque (Required)

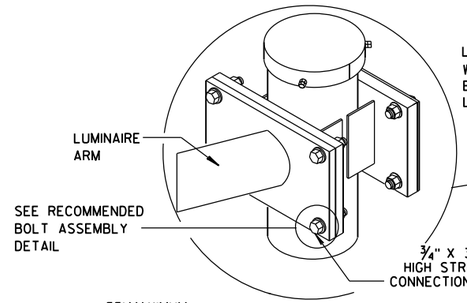
Design Notes:

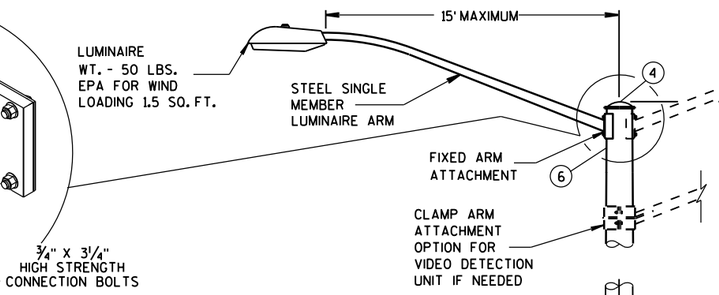
SDD 9E12, sheet "e" (General Notes and Hardware Details for Over Height Type 9, 10, 12 and 13 Poles with Monotube Arms) is required.

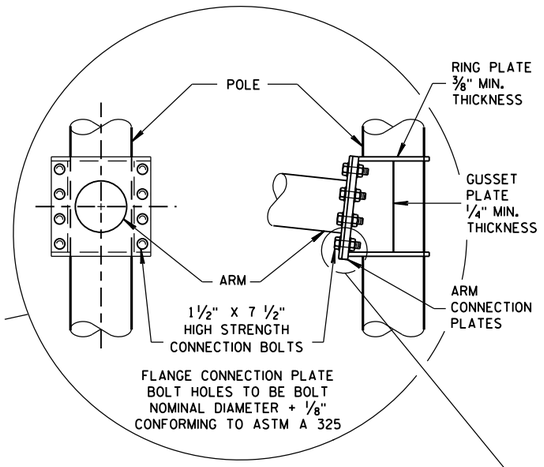
Contact Person:

Ahmet Demirbilek (414) 220-6801

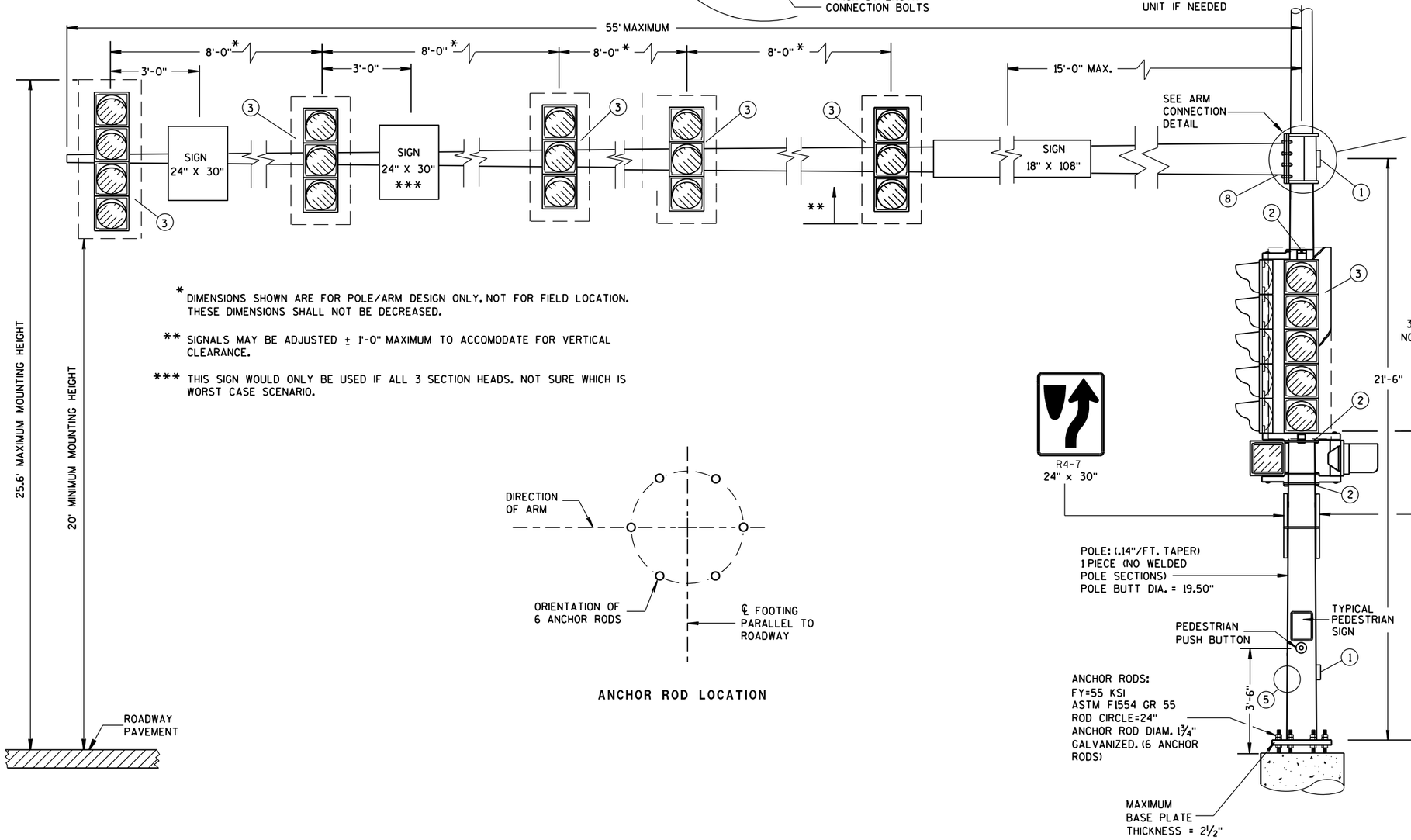
SDD 9e12-d Over Height Type 13 Pole 35' - 55' Monotube Arm







8 BOLT ARM CONNECTION DETAIL

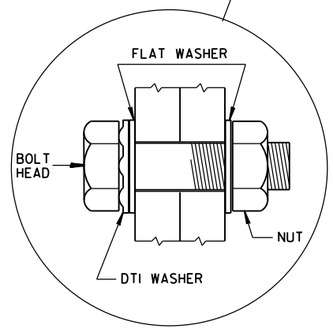


* DIMENSIONS SHOWN ARE FOR POLE/ARM DESIGN ONLY. NOT FOR FIELD LOCATION. THESE DIMENSIONS SHALL NOT BE DECREASED.

** SIGNALS MAY BE ADJUSTED ± 1'-0" MAXIMUM TO ACCOMODATE FOR VERTICAL CLEARANCE.

*** THIS SIGN WOULD ONLY BE USED IF ALL 3 SECTION HEADS. NOT SURE WHICH IS WORST CASE SCENARIO.

ANCHOR ROD LOCATION



RECOMMENDED BOLT ASSEMBLY DETAIL

(MAXIMUM LOAD)

OVER HEIGHT TYPE 13 POLE
35'- 55' MONOTUBE ARM

OVER HEIGHT TYPE 13 POLE
35' - 55' MONOTUBE ARM

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May, 2017 — DATE
/S/ Ahmet Demirbilek — STATE ELECTRICAL ENGINEER
FHWA

6

S.D.D. 9 E 12-1d

6

S.D.D. 9 E 12-1d

Over Height Type 13 Pole 35' - 55' Monotube Arm

References:

Standard Spec 532.3.6.1 for Anchor Rod Tightening
Standard Spec 657.3.3.2 for Bolts and Bolted Connections.
TSDM Monotube Signal Arm and Pole Structures 6-1-11

Bid items associated with this drawing:

ITEM NUMBER	TITLE	UNIT
654.0113	Concrete Base Type 13	EACH
655.0610	Electrical Wire Lighting 12 AWG	LF
657.1400 - 1499	Install Poles Over Height (type)	EACH
657.1535 - 1555	Install Monotube Arms 35-FT to 55-FT	EACH
657.1806 - 1815	Install Luminaire Arms Steel 6-FT to 15-FT	EACH
657.6005	Anchor Assemblies Light Poles on Structures	EACH
658.0100 - 0199	Traffic Signal Face (sections) (size)	EACH
658.0400 - 0499	Pedestrian Signal Face (inch)	EACH
658.0500	Pedestrian Push Buttons	EACH
658.1100 - 1199	Programmable Traffic Signal Face (sections) (size)	EACH
658.5069	Signal Mounting Hardware (location)	LS
659.1100-1199	Luminaries Utility LED (Category)	EACH

Standardized Special Provisions associated with this drawing:

STSP NUMBER	TITLE
NONE	

Other SDDs associated with this drawing:

SDD 9C12	Concrete Base Type 13 Sheets “a” and “b”
SDD 9C13	Concrete Base Type 10 and Type 13 Extension
SDD 12A4	Structure Identification Plaque (Required)

Design Notes:

SDD 9E12, sheet "e" (General Notes and Hardware Details for Over Height Type 9, 10, 12 and 13 Poles with Monotube Arms) is required.

Contact Person:

Ahmet Demirbilek (414) 220-6801

SDD 9e12-e General Notes and Hardware Details for Over Height Type 9, 10, 12 and 13 Poles with Monotube Arms

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

OVER HEIGHT POLE TYPES 9 AND 10 ARE FOR ARM LENGTHS 15-FOOT TO 30-FOOT.

OVER HEIGHT POLE TYPES 12 AND 13 ARE FOR ARM LENGTHS 35-FOOT TO 55-FOOT.

MONOTUBE POLE AND ARM SHALL BE GALVANIZED STEEL.

RING-STIFFENED BUILT-UP BOX TYPE OF ATTACHMENT FOR TRAFFIC SIGNAL ARM.

ONE (1) PIECE POLE CONSTRUCTION (NO WELDED POLE SECTIONS).

STANDARD STRAIGHT ARM DESIGN (3 % ± RISE).

SECTION 657, POLES OF THE STANDARD SPECIFICATIONS SHALL APPLY TO THIS DRAWING.

PROVIDE WIREWAY THRU POLE WALL AND ARM CONNECTION PLATES. PROVIDE ROUND, SMOOTH INSIDE SURFACE.

MANUFACTURER'S SUBMITTED POLE DESIGNS AND DRAWINGS SHALL BE SIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER AND CERTIFIED AS BEING IN COMPLIANCE WITH THE AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNAL 2015 1ST EDITION (INCLUDING 2017 INTERIM REVISIONS) AND ALL PERTINENT WISDOT SPECIFICATIONS AND DRAWINGS FOR TRAFFIC AND LIGHTING STRUCTURES AND AS FOLLOWS:

- CATEGORY III FATIGUE LOADS OF GALLOPING, TRUCK GUSTS (AT 45 MPH VEHICLE VELOCITY) AND NATURAL WIND GUSTS FOR DESIGN OF TYPE 9 AND TYPE 10 STRUCTURES.
- CATEGORY II FATIGUE LOADS OF GALLOPING, TRUCK GUSTS (AT 45 MPH VEHICLE VELOCITY) AND NATURAL WIND GUSTS FOR DESIGN OF TYPE 12 AND TYPE 13 STRUCTURES.
- 90 MPH (3-SECOND GUST) WIND SPEED AND A 50 YEAR DESIGN LIFE.

SECURE THE OPENING BELOW THE BASE PLATE WITH STAINLESS STEEL OR GALVANIZED STEEL MESH AND SECURE THE MESH WITH ¾" S.S. BANDING AROUND THE LEVELING NUTS.

INDENT PRINT (NOMINAL ½" HIGH) THE POLE LENGTH AND FIRST TWO LETTERS OF THE MANUFACTURERS NAME ON TWO SIDES OF THE BASE PLATE 180 DEGREES APART, BEFORE GALVANIZING. THE ARM SHALL BE IDENTIFIED WITH THE SAME INFORMATION BY INDENT PRINT.

SIGNAL FACE SHALL BE MOUNTED 6 INCHES (NOMINAL) FROM THE END OF THE MONOTUBE ARM OR AS SHOWN ON THE PLAN CONSTRUCTION DETAIL OR AS DIRECTED BY THE PROJECT ENGINEER/ELECTRICAL OPERATIONS PERSONNEL. MOUNT ALL LIKE HEADS AT SAME ELEVATION.

SIGN MOUNTING BRACKETS SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 637 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION.

(1) DESIGN FOR MAXIMUM ALLOWABLE HANDHOLE WITH COVER ASSEMBLY WITH TWO ¼" X ¾" - 20 TPI STAINLESS STEEL HEX HEAD BOLTS.

(2) SIGNAL MOUNTING BRACKETS FOR POLE MOUNTING, MOUNT WITH CAP SCREW AND BANDING, (SEE SPECIFICATIONS SEC. 658).

(3) SECURELY MOUNT BACKPLATES, PROJECTING 5" BEYOND ALL SIDES OF THE SIGNAL FACE HOUSING, PER MANUFACTURERS RECOMMENDATIONS.

(4) THE TOP OF THE POLE SHAFT AND THE END OF THE MONOTUBE ARM SHALL BE EQUIPPED WITH A REMOVABLE, VENTILATED CAP HELD SECURELY IN PLACE WITH SET SCREWS.

(5) FACTORY-WELDED BRACKET FOR GROUNDING LUG, OPPOSITE HANDHOLE, (LUG AND HARDWARE PAID UNDER SEPARATE ITEM). PROVIDE HOLE IN BRACKET FOR ¼" X ¾" - 20 TPI STAINLESS STEEL HEX HEAD BOLT.

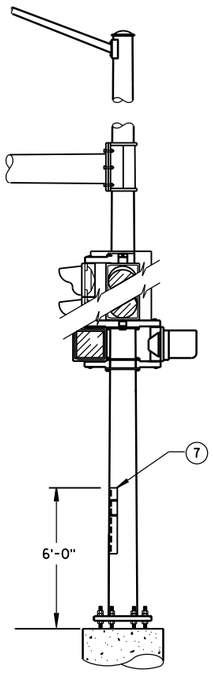
(6) FACTORY-WELDED "J" HOOK FOR STRAIN RELIEF FOR POLE LUMINAIRE WIRE.

(7) INSTALL STRUCTURAL IDENTIFICATION PLAQUES.

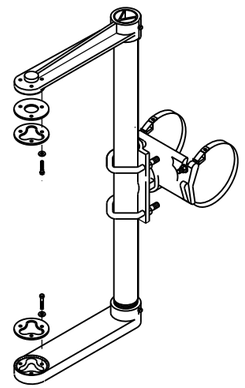
STRUCTURAL IDENTIFICATION PLAQUES SHALL BE PLACED ON THE POLES IN THE SAME DIRECTION AS THE ARM.

MOUNTING HEIGHT SHALL BE 6'-0" ABOVE THE CURB OR SHOULDER. ADJUST IF IT IS KNOWN THAT REQUIRED TRAFFIC SIGNS WILL BE OBSTRUCTED.

(8) FACTORY DRILLED ½" DRAIN HOLE 2" FROM FLANGE CONNECTION PLATE.

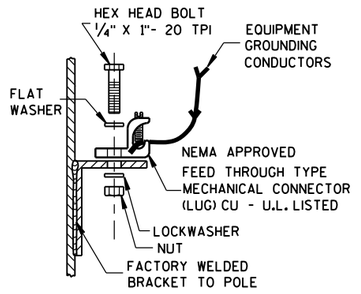


STRUCTURAL IDENTIFICATION PLAQUE PLACEMENT



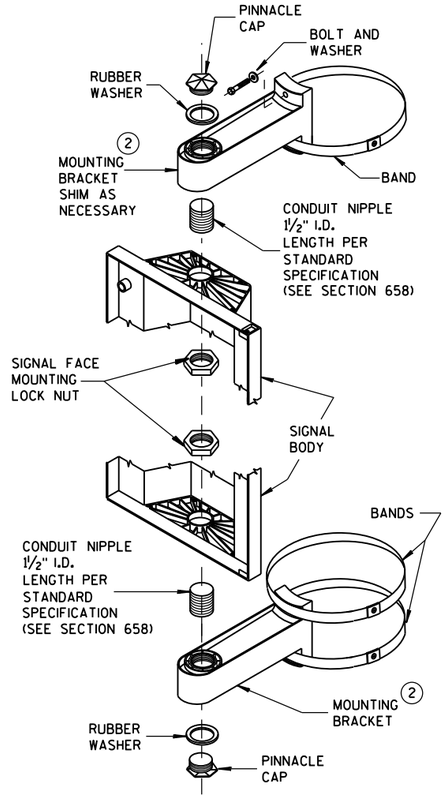
SIGNAL FACE MOUNTING BRACKET DETAIL FOR MONOTUBE ARM

(MOUNT PER MANUFACTURER'S RECOMMENDATION)

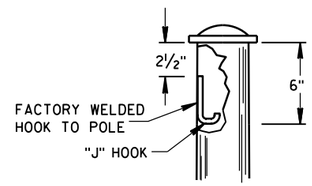


TYPICAL GROUNDING CONNECTIONS (5)

NUT, BOLT AND WASHERS SHALL BE STAINLESS STEEL



SIGNAL FACE VERTICAL MOUNTING DETAIL



"J" HOOK WIRE SUPPORT (6)

GENERAL NOTES AND HARDWARE DETAILS FOR OVER HEIGHT TYPE 9, 10, 12 & 13 POLES WITH MONOTUBE ARMS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2017 — DATE
/S/ Ahmet Demirbilek — STATE ELECTRICAL ENGINEER
FHWA

6

S.D.D. 9 E 12-1e

6

S.D.D. 9 E 12-1e

Version 1 **Standard Detail Drawing 9E12** (sheet e) *June 30, 2017*

General Notes and Hardware Details for Over Height Type 9, 10, 12 and 13 Poles with Monotube Arms

References:

NONE

Bid items associated with this drawing:

ITEM NUMBER	TITLE	UNIT
NONE		

Standardized Special Provisions associated with this drawing:

STSP NUMBER	TITLE
NONE	

Other SDDs associated with this drawing:

NONE

Design Notes:

Include this sheet with all over height pole and monotube combinations in this drawing series (SDD 9E12 Sheets a, b, c, and d).

Contact Person:

Ahmet Demirbilek (414) 220-6801